

REMARKS

The outstanding Official Action and cited art have been reviewed. The application has been amended where believed appropriate in response.

Applicant's amendment to the specification is to make explicit that parallel as used is not meant in the geometric sense, as is believed apparent from, e.g., the detailed description.

Restriction Election

The examiner's comment in paragraph 1 on page 2 of the Official Action is not understood and requires clarification. The Official Action states that "Applicant needs to elect a species" However, applicant did already elect a species in the response filed March 25, 2005.

Concerning the paragraph 2 on page 2 of the Official Action, clarification is requested. The Official Action appears to be stating that one or more dependent claims from an allowed parent claim may be denied inclusion in this application based on the restriction requirement. If that is the intent then this is in error and needs to be corrected. Presentation of clearly allowable claims in a separate application is wasteful of both the applicants' and the Office's time and efforts. Moreover an allowable parent claim constitutes a linking claim joining the groups identified and under those circumstances the restriction requirement is no longer appropriate. Hence withdrawal of the questionable language of this paragraph is requested and examination of the application in the usual manner is requested.

The examiner's comments regarding claims 7 and 29 are understood. However, by this thinking claims 31 and 36 - 41 should be grouped with claim 7.

Regarding claim 69, it is respectfully urged that claim 69 depends from a parent claim that is allowable over the art of record for the reasons set out below and should now be included among the claims presently under examination.

Information Disclosure Statement

The examiner's indication of the two incorrect patent numbers on the previously submitted Information Disclosure Statement (IDS) has been noted. A new IDS, copies of the intended patents and the requisite fee are enclosed.. It is respectfully requested that U.S. patent

No. 4,753,776 to Hillman et al. and patent No. 6,156,576 to Allbritton et al. be considered and made of record.

Claim Objections

The examiner's objection to claim 67 has been noted. That claim has been corrected and is consistent with its parent claim 65. The examiner's objection should now be withdrawn.

35 U.S.C. § 112 Rejections

The rejection of claims 2 and 7 - 12 under 35 U.S.C. § 112 second paragraph is respectfully traversed. However, claim 2 has been cancelled, claim 7 has been made independent and claims 8 - 12 depend from claim 7 or claims dependent from claim 7. With that the basis of the rejection is eliminated and the rejection that was applied to claims 7 - 12 should be withdrawn.

35 U.S.C. §102 Rejections

The rejections of claim 2 over the Krepak patent No. 4,735,722 (Krepak), over the Wilding et al. patent No. 5,587,128 (Wilding '128) and over the Brody et al. patent No. 5,922,210 (Brody '210) are overcome by the cancellation of claim 2.

Krepak '722

The rejection of claims 7 - 9 and 65 - 68 over Krepak is traversed. These claims each call for structure that moves liquid in the claimed instrument by capillary action (also called "capillarity"). There is no such provision in the Krepak patent. The portion 6 of Krepak's desalinization apparatus that the examiner points to as providing capillary action moving salt water from the filter 2 to the filter 3 is filled with a high density liquid. Therefore, no capillary action can occur.

Note that what Krepak refers to at col. 1, lines 10 - 15 is not capillary action. Capillary action is the drawing of a liquid through a narrow passage by the interaction of the liquid with the surface of the solid forming the passage such that the cohesive force between them acts on

the liquid to move the liquid. With the capillaries of Krepak's section 6 already in a dense liquid the surfaces are not available for capillary action.

The definition of capillarity (or capillary action) provided in Hale et al., The Harper Collins Dictionary of Biology, 1991, Harper Collins Publishers, is thus:

capillarity the action by which the surface of a liquid, usually water, is elevated when in contact with a solid surface by attraction of molecules between the liquid and solid surfaces. When the liquid is in a narrow container, for example, a capillary tube, the level of water will rise considerably, but capillarity can also occur in such structures as soils, causing a rise in the water table. Capillarity has been suggested as the explanation of how water rises in *XYLEM* vessels in plants, but it is not considered to exert a significant effect. Compare *COHESION/TENSION HYPOTHESIS*, *ROOT PRESSURE*.

In the Krepak device the solid surface is not available to the salt water to move the salt water therein by capillary action. The Krepak patent teaches nothing in regard to the use of capillary action to move liquid of a specimen in the instruments claimed.

Withdrawal of the rejection of claims 2 and 7 - 12 over Krepak is requested.

Wilding '128

The rejection of claims 7 - 11, 65 - 68 as anticipated by Wilding '128 is respectfully traversed. Claim 7 makes clear that "multiple liquid flow paths sized for capillary action" open into the "first passage downstream of the filter." The "number and dimensions" of those flow paths are chosen "to prolong the flow of the liquid of the sample past the filter." This is unlike Wilding '128.

In Wilding '128 parallel channels 40 are used not to drive the liquid flow, but to determine where therein clogging will occur. See col. 21 line 51 to col. 22, line 18. This teaches essentially the opposite of what the present invention accomplished.

Note at col. 21, lines 54 - 61, referring to the pattern of channels 40, Wilding '128 states:

The presence of amplified polynucleotide product in a sample will influence the flow characteristics within the flow channels. The channels 40 in this embodiment are symmetrically disposed and have a progressively narrower diameter towards the center of the pattern. Flow through this channel pattern is sensitive to changes in fluid viscosity caused by the presence of amplified polynucleotide product.

It is the presence of amplified polynucleotide that the Wilding '128 device seeks to detect. Where clogging occurs in the array of channel gives that information. If those channels were made the engine for moving the liquid in the device then the Wilding '128 device could not operate as intended.

It is true that at col. 7, lines 54 - 56 Wilding '128 states that capillary action or gravity may be the means to have fluid enter the flow system. That is not to say that the array of channels 40 are used as the motivating engine through capillary action therein. As the Wilding '128 patent goes on to clearly state, that is not the purpose of the channels 40.

Dependent claims 8 - 11 are patentable over Wilding '128 with claim 7 from which they depend, as well as for such patentably differing subject matter as is contained therein.

Independent claim 65 calls for "the expanded flow path defining means for establishing a continuous flow of the liquid of the sample past the filter location for an extended period of time so as to pass liquid past and through the filter." Again, as with claim 7, the Wilding '128 patent has no such provision. There is in Wilding '128 no such "expanded flow path" and certainly nothing that can correctly be characterized as "means for establishing a continuous flow of the liquid" defined by an expanded flow path. Claim 65, it is respectfully urged, is patentable over the Wilding '128 patent.

The dependent claims 66 - 68 are patentable over Wilding '128 by their dependency as well as by any further patentable content contained therein. Attention is particularly directed to claim 66's "plurality of parallel connected channels sized to draw the liquid filtrate therethrough by capillary action." The foregoing remarks as to the multiple liquid flow paths of claim 7 are applicable here as well.

Allowance of all of claims 65 to 68 at this time is believed appropriate.

Brody '210

The rejection of claims 7, 9, 10, 65, 67 and 68 as anticipated by Brody '210 is respectfully traversed.

Like Wilding '128, Brody '210 does not have claim 7's "multiple liquid flow paths sized for capillary action and each opening from the first passage downstream of the filter, the number and dimensions of the liquid flow paths of the expanded liquid flow path being chosen to prolong

the flow of liquid of the sample past the filter to accomplish a continuous flow of a duration sufficient to separate filtrate from the liquid of the sample."

Also like Wilding '128, Brody '210 does not have claim 65's "expanded flow path for drawing liquid therealong by capillary action, and the expanded flow path defining means for establishing a continuous flow of the liquid of the sample past the filter location for an extended period of time so as to pass liquid past and through the filter."

There is no suggestion of these provisions of claim 7 and 65 in the Brody '210 patent. Claims 7 and 65 are thus not anticipated by Brody '210. In particular, none of the sections of the Brody '210 patent specifically cited by the examiner in the outstanding Official Action suggest such features. Neither does any other provision of the Brody '210 patent. Consequently the Brody '210 patent cannot be said to anticipate the two independent claims 7 and 65.

Claims 9, 10 and 67 and 68 are patentable over Brody '210 by their dependencies as well as by such patentable content as they recite. The rejection of claims 7, 9, 10, 65 and 67 and 68 over Brody '210 under 35 U.S.C. § 102 should now be withdrawn.

Rejections Under 35 U.S.C. § 103

Wilding '128 with Quake et al.

Claim 12 stands rejected as obvious over the combination of Wilding '128 and Quake et al. Claim 12 is a dependent claim that incorporates the features of claim 7 by its dependency. As pointed out above, the Wilding '128 patent does not teach or suggest the "multiple liquid flow paths sized for capillary action ... each opening from the first passage down stream of the filter," the number and dimensions of which are chosen "to prolong the flow of liquid"

Quake et al. is cited in the Official Action for its optical provisions. However, Quake et al. do not teach the multiple liquid flow paths sized for capillary action and located as set forth in claim 7 that are missing as well from Wilding '128. The teachings of the two patents cannot be combined to provide that which is taught in neither.

Note that each of the passages 32 (cited in the Official Action under the rejection of claims 8, 11, 12 and 66 with Brody '210) is a single flow path associated with a single test or "detection region" 36 in Quake et al. There are no multiple flow paths acting as a capillary action engine to move liquid past a filter as in claim 7. No combination of Quake et al. with

Wilding '128 would arrive at the provisions claimed in claim 7, nor, by virtue of its dependency claim 12.

Claim 12, it is urged, is allowable over the combination of Wilding '128 and Quake et al.

Also it would not be obvious to modify Wilding '128 to prolong flow through the device since the purpose of Wilding '128 is to observe where in the array of channels 40 "clogging" will be observed. Such a modification of Wilding '128 would run counter to the teaching of the Wilding '128 patent and so would not be obvious.

Brody '210 in View of Quake et al.

Claims 8, 11, 12 and 66 stand rejected under 35 U.S.C. § 103 as obvious over Brody '210 and Quake et al.

As mentioned just above, the Quake et al. patent does not teach claim 7's provisions relating to the multiple capillary action-providing flow paths that open into the flow path that delivers liquid to and past the filter. Also as pointed out above Brody '210 lacks any teaching of this feature of claim 7. Consequently no combination of the two Brody '210 and Quake et al. can result in the provisions of parent claim 7 or its dependent claim 8, 11 and 12. Consequently these claims are patentable over the combination of Brody '210 and Quake et al. should it be obvious to somehow combine the two.

As for claim 66, it depends from claim 65. Neither Brody '210 nor Quake et al. teach parent claim 65's "expanded flow path defining means for establishing a continuous flow of the liquid ... for an extended period of time so as to pass liquid past and through the filter." Again the two patents cannot be combined to provide that which can be found in neither. By its dependency, then, claim 66 is patentable over the combination of Brody '210 and Quake et al. if that combination were obvious.

New Claims 70 - 110

New claims 70 - 110 either recite or include by their dependencies provisions relating to the capillary action, flow enhancing features referred to above and not found in the art of record. Claims 70 - 110 are believed patentable over the art of record for this reason.

For all of the above reasons it is respectfully urged that all of the claims now being examined in this application are patentable over the art of record. All claims dependent from the

allowable claims presently being examined are allowable over all art of record as well. All of these claims then should now be allowed. Favorable reconsideration and allowance of this application at this time is respectfully requested.

In the event that the examiner has questions or suggestions regarding the foregoing or the claims of this application, he is invited to contact the undersigned attorney for applicant by telephone or email at the telephone number or email address given below. Early favorable reconsideration of the application is requested.

A three month extension of time in which to respond to the Official Action is requested in the accompanying Request for Extension of Time, submitted in duplicate.

Respectfully submitted,

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Date: 4 November 2005

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